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| 09/960,575      | 09/24/2001  | Shinichi Imai        | 0819-0651           | 7295             |

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EXAMINER

MAGEE, THOMAS J

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 04/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Applicant No.

09/960,575

Applicant(s)

IMAI, SHINICHI

Examiner

Thomas J. Magee

Art Unit

2811

— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6 and 16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6 and 16 is/are rejected.
- 7) ☒ Claim(s) 1 and 2 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Claim Cancellations***

1. Applicant's cancellation of Claim 5 in Letter No. 13 of January 31, 2003 is acknowledged. Claims 1 – 4, 6, and 16 are pending and still active.

### ***Drawings***

2. Drawing changes in Figures 1, 5A, and 5B, as submitted by Applicant on January 31, 2003, are approved.

### ***Claim Objections***

3. Claims 1 and 2 are objected to because of the difficulties encountered in interpreting the exact nature of the claim limitations from the language in the claims. The phrase, "the boundary is a line between the active region and the isolating region, is small enough so that a breakdown ratio of the capacitance insulating film will have no practical problem," is nebulous, particularly in regard to its part in defining the ratio, S/L. More quantitative description is required. Further, in Claim 2, reference to "the value" has no meaning as stated, since Claim 1 recites no "value" in the instant application.

### ***Claim Rejections – 35 U.S.C. 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 3, 4, 6, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Saito et al. (US 5,691,556).

6. Regarding Claim 1, Saito et al. disclose (Col. 21, lines 26 – 42) an integrated circuit containing capacitors, where an active region and an isolating region (17) (See Figure 1) enclosing the active region are provided on a silicon layer (24) with an insulating film (22) on the active region with a boundary in contact with the isolating region (17). An upper conducting plate (21) atop the insulating film with a portion over the isolating region is electrically continuous and corresponds exactly with the electrically continuous pad, lead conductive film and upper electrode recited in the instant application. An interlayer insulating film is formed over the substrate.

7. Regarding Claim 3, as mentioned previously, Saito et al. disclose an integrated circuit containing capacitors with an active region, isolating region enclosing active region on a silicon layer with an insulating film on the active region and a boundary in contact with the isolating region. An upper conducting layer atop the insulating film, with a portion over the isolating region is electrically continuous and corresponds exactly with the electrically continuous pad, lead conductive film and upper electrode recited in the instant application, An interlayer insulating film is formed over the substrate and contact

holes penetrate the layer to reach the conducting layer. The capacitance insulating film is thicker within the boundary portion than at other points.

8. Regarding Claims 4 and 6, Saito et al. disclose a second and a first active region, such that the first and second active regions are sandwiched by the isolating region (See Figure 6). A first capacitance insulating film (22) is formed on the first active region with a boundary in contact with the isolating region. A second capacitance insulating film is formed on the second active region. An upper conducting layer is formed on the first capacitance insulating film extending over a part of the isolating region, corresponding exactly to the electrically continuous upper electrode, pad and lead conductive film. An interlayer insulating film is formed over the substrate and subsequently, contact holes cut, where the first contact holes penetrate the interlayer insulating film to reach the conducting (electrode pad) layer and second contact holes penetrating the interlayer insulating film and second capacitance insulating film to reach the second active region. The diameter of the second contact hole is larger than the first (See Figure 6 at contacts 66 and 68). The aspect ratios, defined as,  $d/h$  ( $d$ =diameter and  $h$ =height), are approximately equal, since from the figure, the heights and diameters for each hole individually, are equal.

9. Regarding Claim 16, Saito et al. disclose (See Figure 5) that the widths of the lead conductive films (11, 12, and 14) are substantially constant.

***Claim Rejections – 35 U.S.C. 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al. Saito et al. do not disclose a numerical value of 4 ; however, it would have been obvious at the time of the invention to one of ordinary skill in the art to adjust or optimize parameters to obtain the recited value of the instant application. (In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955))

***Response to Arguments***

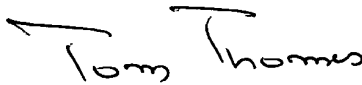
12. Applicant's arguments in regard to claims have been fully considered but they are not persuasive. Comments on hole diameters seem irrelevant and Examiner used other sections of the reference that at least, appear easier to measure.

In regard to Claim 3 and the LOCOS film, there is nothing in the recited claim that places stringent limitations on the nature of the film within the boundary region and Examiner must use those limitations that Applicant has recited. In this case, the film of Saito et al. is thicker within the boundary region.

***C nclusi ns***

13. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to **Thomas Magee**, whose telephone number is **(703) 305 5396**. The Examiner can normally be reached on Monday through Friday from 8:30AM to 5:00PM (EST). If attempts to reach the Examiner by telephone are unsuccessful, the examiner's supervisor, **Tom Thomas**, can be reached on **(703) 308-2772**. The fax number for the organization where this application or proceeding is assigned is **(703) 308-7722**.

Thomas Magee  
April 18, 2003

  
TOM THOMAS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800